



2048-59331-E.ST25
SEQUENCE LISTING

<110> BINLEY, JAMES M
SCHUELKE, NORBERT
OLSON, WILLIAM C
MADDON, PAUL J
MOORE, JOHN P

<120> STABILIZED VIRAL ENVELOPE PROTEINS AND USES THEREOF

<130> 2048/59331-E

<140> 10/780,993

<141> 2004-02-18

<150> 60/141,168

<151> 1999-06-25

<150> 09/602,864

<151> 2000-06-23

<160> 17

<170> PatentIn version 3.2

<210> 1

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<212> PRT

<213> Human immunodeficiency virus type 1

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<213> Human immunodeficiency virus type 1

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Thr Glu Val His Asn Val Trp Ala Thr His Ala Cys Val Pro Thr Asp
35 40 45

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Pro Asn Pro Gln Glu Val Val Leu Glu Asn Val Thr Glu His Phe Asn
50 55 60

Met Trp Lys Asn Asn Met Val Glu Gln Met Gln Glu Asp Ile Ile Ser
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Val Thr Leu Asn
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 <213> Human immunodeficiency virus type 1

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<210> 12

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<210> 13
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<212> PRT
<213> Human immunodeficiency virus type 1
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Thr Glu Val His Asn Val Trp Ala Thr His Ala Cys Val Pro Thr Asp
35 40 45

Pro Asn Pro Gln Glu Val Val Leu Glu Asn Val Thr Glu His Phe Asn
50 55 60

Met Trp Lys Asn Asn Met Val Glu Gln Met Gln Glu Asp Ile Ile Ser
65 70 75 80

Leu Trp Asp Gln Ser Leu Lys Pro Cys Val Lys Leu Thr Pro Leu Cys
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Val Thr Leu Asn Cys Lys Asp Val Asn Ala Thr Asn Thr Thr Asn Asp
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Ser Glu Gly Thr Met Glu Arg Gly Glu Ile Lys Asn Cys Ser Phe Asn
115 120 125

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Tyr Lys Leu Asp Val Val Pro Ile Asp Asn Asn Asn Thr Ser Tyr Arg
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Leu Ile Ser Cys Asp Thr Ser Val Ile Thr Gln Ala Cys Pro Lys Ile
165 170 175

Ser Phe Glu Pro Ile Pro Ile His Tyr Cys Ala Pro Ala Gly Phe Ala
180 185 190

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Ile Leu Lys Cys Asn Asp Lys Thr Phe Asn Gly Lys Gly Pro Cys Lys
195 200 205

Asn Val Ser Thr Val Gln Cys Thr His Gly Ile Arg Pro Val Val Ser
210 215 220

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Arg Ser Asp Asn Phe Thr Asn Asn Ala Lys Thr Ile Ile Val Gln Leu
245 250 255

Lys Glu Ser Val Glu Ile Asn Cys Thr Arg Pro Asn Asn Asn Thr Arg
260 265 270

Lys Ser Ile His Ile Gly Pro Gly Arg Ala Phe Tyr Thr Thr Gly Glu
275 280 285

Ile Ile Gly Asp Ile Arg Gln Ala His Cys Asn Ile Ser Arg Ala Lys
290 295 300

Trp Asn Asp Thr Leu Lys Gln Ile Val Ile Lys Leu Arg Glu Gln Phe
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Glu Asn Lys Thr Ile Val Phe Asn His Ser Ser Gly Gly Asp Pro Glu
325 330 335

Ile Val Met His Ser Phe Asn Cys Glu Gly Glu Phe Phe Tyr Cys Asn
340 345 350

Ser Thr Gln Leu Phe Asn Ser Thr Trp Asn Asn Asn Thr Glu Gly Ser
355 360 365

Asn Asn Thr Glu Gly Asn Thr Ile Thr Leu Pro Cys Arg Ile Lys Gln
370 375 380

Ile Ile Asn Met Trp Gln Glu Val Gly Lys Ala Met Tyr Ala Pro Pro
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Ile Arg Gly Gln Ile Arg Cys Ser Ser Asn Ile Thr Gly Leu Leu Leu
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Gly Gly Gly Asp Met Arg Asp Asn Trp Arg Ser Glu Phe Tyr Lys Tyr
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Arg Arg Val Val Gln Arg Glu Lys Arg Ala Val Gly Ile Gly Ala Val
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Met Thr Leu Thr Val Gln Ala Arg Leu Leu Leu Ser Gly Ile Val Gln
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Gln Gln Asn Asn Leu Leu Arg Ala Ile Glu Ala Gln Gln Arg Met Leu
 515 520 525

Gln Leu Thr Val Trp Gly Ile Lys Gln Leu Gln Ala Arg Val Leu Ala
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Val Glu Arg Tyr Leu Gly Asp Gln Gln Leu Leu Gly Ile Trp Gly Cys
 545 550 555 560

Ser Gly Lys Leu Ile Cys Cys Thr Ala Val Pro Trp Asn Ala Ser Trp
 565 570 575

Ser Asn Lys Ser Leu Asp Arg Ile Trp Asn Asn Met Thr Trp Met Glu
 580 585 590

Trp Glu Arg Glu Ile Asp Asn Tyr Thr Ser Glu Ile Tyr Thr Leu Ile
 595 600 605

Glu Glu Ser Gln Asn Gln Gln Glu Lys Asn Glu Gln Glu Leu Leu Glu
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Leu Trp Tyr

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20 25 30

Thr Glu Val His Asn Val Trp Ala Thr His Ala Cys Val Pro Thr Asp
35 40 45

Pro Asn Pro Gln Glu Val Val Leu Glu Asn Val Thr Glu His Phe Asn
50 55 60

Met Trp Lys Asn Asn Met Val Glu Gln Met Gln Glu Asp Ile Ile Ser
65 70 75 80

Leu Trp Asp Gln Ser Leu Lys Pro Cys Val Lys Leu Thr Pro Leu Cys
85 90 95

Gly Ala Gly Cys Asp Thr Ser Val Ile Thr Gln Ala Cys Pro Lys Ile
100 105 110

Ser Phe Glu Pro Ile Pro Ile His Tyr Cys Ala Pro Ala Gly Phe Ala
115 120 125

Ile Leu Lys Cys Asn Asp Lys Thr Phe Asn Gly Lys Gly Pro Cys Lys
130 135 140

Asn Val Ser Thr Val Gln Cys Thr His Gly Ile Arg Pro Val Val Ser
145 150 155 160

Thr Gln Leu Leu Leu Asn Gly Ser Leu Ala Glu Glu Glu Val Val Ile
165 170 175

Arg Ser Asp Asn Phe Thr Asn Asn Ala Lys Thr Ile Ile Val Gln Leu
180 185 190

Lys Glu Ser Val Glu Ile Asn Cys Thr Arg Pro Asn Asn Asn Thr Arg
195 200 205

Lys Ser Ile His Ile Gly Pro Gly Arg Ala Phe Tyr Thr Thr Gly Glu
210 215 220

Ile Ile Gly Asp Ile Arg Gln Ala His Cys Asn Ile Ser Arg Ala Lys
225 230 235 240

Trp Asn Asp Thr Leu Lys Gln Ile Val Ile Lys Leu Arg Glu Gln Phe
245 250 255

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 Ile Val Met His Ser Phe Asn Cys Gly Gly Glu Phe Phe Tyr Cys Asn
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 Asn Asn Thr Glu Gly Asn Thr Ile Thr Leu Pro Cys Arg Ile Lys Gln
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 370 375 380
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 385 390 395 400
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 420 425 430
 Met Thr Leu Thr Val Gln Ala Arg Leu Leu Leu Ser Gly Ile Val Gln
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 Gln Leu Thr Val Trp Gly Ile Lys Gln Leu Gln Ala Arg Val Leu Ala
 465 470 475 480
 Val Glu Arg Tyr Leu Gly Asp Gln Gln Leu Leu Gly Ile Trp Gly Cys
 485 490 495
 Ser Gly Lys Leu Ile Cys Cys Thr Ala Val Pro Trp Asn Ala Ser Trp
 500 505 510

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Ser Asn Lys Ser Leu Asp Arg Ile Trp Asn Asn Met Thr Trp Met Glu
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Trp Glu Arg Glu Ile Asp Asn Tyr Thr Ser Glu Ile Tyr Thr Leu Ile
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Glu Glu Ser Gln Asn Gln Gln Glu Lys Asn Glu Gln Glu Leu Leu Glu
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Thr Glu Val His Asn Val Trp Ala Thr His Ala Cys Val Pro Thr Asp
 35 40 45

Pro Asn Pro Gln Glu Val Val Leu Glu Asn Val Thr Glu His Phe Asn
 50 55 60

Met Trp Lys Asn Asn Met Val Glu Gln Met Gln Glu Asp Ile Ile Ser
 65 70 75 80

Leu Trp Asp Gln Ser Leu Lys Pro Cys Val Lys Leu Thr Pro Leu Cys
 85 90 95

Val Thr Leu Asn Cys Lys Asp Val Asn Ala Thr Asn Thr Thr Asn Asp
 100 105 110

Ser Glu Gly Thr Met Glu Arg Gly Glu Ile Lys Asn Cys Ser Phe Asn
 115 120 125

Ile Thr Thr Ser Ile Arg Asp Glu Val Gln Lys Glu Tyr Ala Leu Phe
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Tyr Lys Leu Asp Val Val Xaa Ile Asp Asn Asn Asn Thr Ser Tyr Arg
 145 150 155 160

Leu Ile Ser Cys Asp Thr Ser Val Ile Thr Gln Ala Cys Pro Lys Ile
 165 170 175

Ser Phe Glu Pro Ile Pro Ile His Tyr Cys Ala Pro Ala Gly Phe Ala
 180 185 190

Ile Leu Lys Cys Asn Asp Lys Thr Phe Asn Gly Lys Xaa Pro Cys Lys
 195 200 205

Asn Val Ser Thr Xaa Gln Cys Thr His Gly Ile Arg Pro Val Val Ser
 210 215 220

Thr Gln Leu Leu Leu Asn Gly Ser Leu Ala Glu Glu Glu Val Val Ile
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 260 265 270
 Gly Asp Ile Arg Gln Ala His Cys Asn Ile Ser Arg Ala Lys Trp Asn
 275 280 285
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 Lys Thr Ile Val Phe Asn His Ser Ser Gly Gly Asp Pro Glu Ile Val
 305 310 315 320
 Met His Ser Phe Asn Cys Gly Gly Glu Phe Phe Tyr Cys Asn Ser Thr
 325 330 335
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 355 360 365
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 385 390 395 400
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 465 470 475 480

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Leu Thr Val Gln Ala Arg Leu Leu Leu Ser Gly Ile Val Gln Gln Gln
485 490 495

Asn Asn Leu Leu Arg Ala Ile Glu Ala Gln Gln Arg Met Leu Gln Leu
500 505 510

Thr Val Trp Gly Ile Lys Gln Leu Gln Ala Arg Val Leu Ala Val Glu
515 520 525

Arg Tyr Leu Gly Asp Gln Gln Leu Leu Gly Ile Trp Gly Cys Ser Gly
530 535 540

Lys Leu Ile Cys Cys Thr Ala Val Pro Trp Asn Ala Ser Trp Ser Asn
545 550 555 560

Lys Ser Leu Asp Arg Ile Trp Asn Asn Met Thr Trp Met Glu Trp Glu
565 570 575

Arg Glu Ile Asp Asn Tyr Thr Ser Glu Ile Tyr Thr Leu Ile Glu Glu
580 585 590

Ser Gln Asn Gln Gln Glu Lys Asn Glu Gln Glu Leu Leu Glu Leu Asp
595 600 605

Lys Trp Ala Ser Leu Trp Asn Trp Phe Asp Ile Thr Lys Trp Leu Trp
610 615 620

Tyr
625